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U.S. DEPARTMENT OF AGRICULTURE • Economic Research Service

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AGRICULTURAL ECONOMICS RESEARCH

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Contributions of Rural Migrants to the Urban Occupational Structure[1]

By Anne S. Lee and Cladys K. Bowles

Rural-urban migrants in the United States do not appear to contribute unduly to the lower status urban occupations. Nationally, their shares in 1967 were about equal to their share of urban population in the professional and managerial occupations, higher among craftsmen and operatives, and lower for clerical and sales people. They were represented proportionally in the service and nonfarm labor categories, and excessively among private household workers. Some differences in occupations of rural-urban migrants were noted for race-sex groups and for the South compared with the non-South.

Keywords: Population; Migration; Occupation; Residence; Race.

One of the major forces in American urban growth has been migration from rural areas. So great has this influx been that in 1967, for example, at least one out of every five urban residents 17 years old and over was of rural origin. For most of these rural migrants, the moves to urban areas had been from areas with declining economic opportunities and limited occupational choices. Once in an urban area, however, many of the migrants were forced to compete for jobs with urban natives who were better educated and who had better knowledge of and easier entree into the urban occupational structure simply by virtue of having been there longer. Given these circumstances, one might hypothesize that rural-urban migrants would be at a disadvantage in seeking employment and would be disproportionately concentrated in lower status occupations. This paper explores that proposition, using data for 1967 and 1940, by examining whether rural-urban migrants held shares in nine broad occupational groups proportionate to their share in the total urban employed population.

One of the largest bodies of data for examining rural-urban migrants is the 1967 Survey of Economic Opportunity (SEO).[2] This was the second of two special surveys conducted by the Bureau of the Census for the Office of Economic Opportunity to obtain detailed information about poverty at the national and regional levels. The SEO contains the most recent data available. Migrants were defined in the SEO as persons who had ever lived 50 miles or more from their 1967 residences, and information was obtained about the last residence at least 50 miles away and the residence at age 16. Rural-urban designations for 1967 were the same as for the 1960 Census of Population. Earlier residences described as in a town or village, in the open country but not on a farm, or on a farm were classified as rural. Occupational categories were the same as those used in the 1960 Census but referred to the longest occupation held during 1966 rather than during the week preceding the survey.

Rural-Urban Migrants in the Urban Occupational Structure

Just as rural-urban migrants comprised a fifth of all urban residents in the country as a whole in 1967 (table 1), so too did they constitute a fifth of all urban persons 17 years old and over who reported having been employed at some time during 1966. But if their share of all urban employed persons was the same as for the total urban population, their shares of the nine occupational groups being examined here were not. Significantly larger proportions of rural-urban migrants were found in three categories—craftsmen, operatives, and

[1] The research on which this article is based was begun under Memorandum of Agreement No. 12-17-04-6-174 between the Office of Economic Opportunity and the U. S. Department of Agriculture and Memorandum of Agreement No. 12-17-09-2-472 between the U.S. Department of Agriculture and the University of Georgia. These Agreements provided for a study of the "Poverty Dimensions of Rural-to-Urban Migration," based on the 1967 Survey of Economic Opportunity. The research is being continued as a part of the project, "Population Redistribution: A Challenge for Policy and Planning," underway at the University of Georgia. The latter project is funded by the National Science Foundation, Research Applied to National Needs, and is supported, in part, by the Economic Research Service. The article was originally presented at the annual meeting of the Rural Sociological Society, August 1973, University of Maryland, College Park, Md.

[2] For a full discussion of the 1967 Survey of Economic Opportunity, see Gladys K. Bowles, A. Lloyd Bacon, and P. Neal Ritchey, *Poverty Dimensions of Rural-to-Urban Migration: A Statistical Report*, Population-Migration Reports, Rural-Urban Migrants, Vol. 1, Part 1 (Washington, D.C.: U.S. Government Printing Office, 1973).

Table 1. Urban population by origin, 1967

Origin	Population		Employed persons	
	Number	Percentage	Number	Percentage
	Thous.	*Pct.*	*Thous.*	*Pct.*
Total urban	88,510	100.0	59,346	100.0
Rural-urban migrants	18,417	20.8	11,787	19.9
Urban population of urban origin	70,093	79.2	47,559	80.1

private household workers—while the proportions engaged in clerical and sales activities were significantly lower than their proportion of all employed persons (table 2).[3] In two of the four white-collar occupations, the share of rural-urban migrants was no different from their share of the total group. This was true of two lower status occupations as well—service workers and nonfarm laborers. It appears then that rural-urban migrants as a group were proportionately represented in higher status occupations and were not contributing excessively to the lowest groups, with the exception of private household workers.

Underlying this occupational structure of the total urban population was the distribution by occupation of each race and sex group. Since the occupational classifications of whites and Negroes and of males and females differ considerably, the proportion of rural-urban migrants in each occupational group could be affected by the relative success of each race-sex group in attaining employment in a given occupation. Table 3 shows the proportions for each race and sex group calculated separately. Rural-urban migrants comprised varying shares of the occupational classes among race-sex groups; in few occupations were their shares significantly different, in terms of the SEO sample size, from the share they comprised of urban employed people. The only clearcut evidence of excessive shares in lower status occupations was found among female private household workers, both white and Negro.

In comparison with all urban employed persons, rural-urban migrants were somewhat more likely both to live in the South and to be of Southern origin as well. Whereas 40 percent of the employed rural-urban migrants had initial residences in the South, the figure for all urban employed persons was about 28 percent. About a third of the Southern rural-origin migrants were in the non-South in 1967, and they were almost as likely to be Negroes as whites. The contributions of rural-urban migrants to the urban occupational structure for whites and Negroes in the South and non-South are shown in tables 4 and 5.

The South

Rural-urban migrants were relatively more important in the urban occupational structure of the South than of

[3] Throughout this article, statistical significance was tested by the application of standard errors developed by the Office of Economic Opportunity for the 1967 Survey of Economic Opportunity. See Bowles et al., op. cit., chapter 20.

Table 2. Urban population 17 years old and over by occupation in 1966, and percentage of rural-urban migrants, by race and sex, United States, 1967

Major occupational group	Total[a]	Rural-urban migrants				
		Total[a]	White males	White females	Negro males	Negro females
	Thousands	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Professional, technical, and kindred workers	8,141	19.4	11.7	6.9	0.2	0.4
Managers, officials, and proprietors	5,897	18.6	15.1	2.8	0.4	0.1
Clerical and kindred workers	11,658	15.8	3.5	11.1	0.4	0.5
Sales workers	4,274	16.5	7.8	7.9	0.1	0.4
Craftsmen, foremen, and kindred workers	7,056	23.1	20.4	1.0	1.3	0.1
Operatives	10,767	22.3	12.0	6.4	2.5	1.1
Private household workers	1,487	29.9	0.0	14.6	0.1	14.7
Service, except private household	6,491	21.0	6.7	9.4	2.1	2.5
Laborers, except farm and mine	2,822	19.2	11.7	0.2	6.6	0.1
Total reporting employment[b]	59,346	19.9	10.4	6.7	1.3	1.1

[a] Includes whites, Negroes, and other races.
[b] Includes persons with farm occupations and persons not reporting occupation.

Source: 1967 Survey of Economic Opportunity.

Table 3. Urban population 17 years old and over by occupation in 1966, and number and percentage of rural-urban migrants, by race and sex, United States, 1967

Race and major occupational group	Males			Females		
	Total	Rural-urban migrants		Total	Rural-urban migrants	
		Number	Percentage		Number	Percentage
	Thousands	*Thousands*	*Percent*	*Thousands*	*Thousands*	*Percent*
White:						
Professional, technical, and kindred workers	4,797	952	19.8	2,895	562	19.4
Managers, officials, and proprietors	4,712	890	18.9	991	165	16.6
Clerical and kindred workers	2,645	413	15.6	8,094	1,295	16.0
Sales workers	2,184	334	15.3	1,934	336	17.4
Craftsmen, foremen, and kindred workers	6,275	1,441	23.0	237	72	30.4
Operatives	6,001	1,290	21.5	3,177	691	21.7
Private household workers	17	0	--	698	217	31.1
Service, except private household	2,172	433	19.9	2,844	608	21.4
Laborers, except farm and mine	1,971	329	16.7	75	7	--
Total reporting employment[a]	31,182	6,180	19.8	21,106	3,993	18.9
Negro:						
Professional, technical, and kindred workers	141	19	13.5	208	32	15.4
Managers, officials, and proprietors	107	25	23.4	30	4	--
Clerical and kindred workers	277	43	15.5	566	64	11.3
Sales workers	47	5	--	85	18	21.2
Craftsmen, foremen, and kindred workers	458	95	20.7	27	5	--
Operatives	970	270	27.8	520	121	23.3
Private household workers	4	1	--	755	219	29.0
Service, except private household	559	135	24.2	823	162	19.7
Laborers, except farm and mine	698	187	26.8	37	3	--
Total reporting employment[a]	3,359	799	23.8	3,107	646	20.8

[a]Includes persons with farm occupations and persons not reporting occupation.

Source: 1967 Survey of Economic Opportunity.

the non-South; close to a quarter of all employed workers in the urban South had originated in rural areas. By and large, these migrants were white and had come from the South itself; most of them reported no residence in any other region. Their proportion in any given occupational group was about what one would expect from their proportion among total employed workers. The proportion for private household workers was higher than average but this difference was not statistically significant.

The relative shares of each occupational group for each race-sex group tended to be proportionate as well. This was true for white males and for white females in every occupation. Two-fifths of all white private household workers were of rural origin, but this was not a major occupation for white females. Among Negroes,

Table 4. White urban population 17 years old and over by occupation in 1966, and percentage of rural-urban migrants, by selected characteristics, South and non-South, 1967

Sex and major occupational group	Urban South[a]					Urban non-South[a]				
		Rural-urban migrants					Rural-urban migrants			
	Total	Total	Within South	Return South	To South	Total	Total	Within non-South	Return non-South	To non-South
Males:	*Thous.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Thous.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*
Professional, technical, and kindred workers	1,083	24.0	15.1	1.0	7.9	3,502	18.0	15.6	0.9	1.5
Managers, officials, and proprietors	1,276	23.2	17.9	1.6	3.7	3,259	16.5	13.9	0.8	1.8
Clerical and kindred workers	653	21.0	14.1	2.0	4.9	1,881	13.1	10.0	1.1	2.0
Sales workers	502	19.3	15.5	2.4	1.4	1,613	13.1	11.8	0.2	1.1
Craftsmen, foremen, and kindred workers	1,470	27.4	22.6	2.1	2.7	4,385	20.1	15.8	1.2	3.1
Operatives	1,381	25.5	20.5	3.5	1.5	4,187	17.5	12.5	0.6	4.4
Private household workers	0	—	—	—	—	13	—	—	—	—
Service, except private household	329	23.0	18.5	1.2	3.3	1,593	15.0	12.2	0.4	2.4
Laborers, except farm and mine	352	21.1	13.4	5.4	2.3	1,470	13.3	9.5	0.5	3.3
Total reporting employment[b]	7,131	24.2	18.3	2.3	3.6	22,182	16.8	13.4	0.8	2.6
Females:										
Professional, technical, and kindred workers	632	22.8	16.6	1.3	4.9	2,114	18.5	14.6	1.7	2.2
Managers, officials, and proprietors	220	21.8	15.9	4.1	1.8	708	14.4	14.0	0.4	0.0
Clerical and kindred workers	1,886	22.8	18.0	1.6	3.2	5,882	13.3	11.2	0.6	1.5
Sales workers	464	25.9	13.4	5.2	7.3	1,400	14.4	12.0	0.8	1.6
Craftsmen, foremen, and kindred workers	47	—	—	—	—	176	32.9	28.4	0.0	4.5
Operatives	685	20.0	15.8	3.2	1.0	2,065	19.3	13.4	0.9	5.0
Private household workers	147	40.9	36.1	0.0	4.8	443	21.0	17.6	0.0	3.4
Service, except private household	534	25.0	19.5	2.1	3.4	2,075	18.9	14.7	0.5	3.7
Laborers, except farm and mine	24	—	—	—	—	49	—	—	—	—
Total reporting employment[b]	4,680	23.3	17.6	2.3	3.4	15,014	16.3	13.1	0.8	2.4

[a]Persons with initial residence outside the United States omitted.

[b]Includes persons with farm occupations and persons not reporting occupation.

Source: 1967 Survey of Economic Opportunity.

Table 5. Negro urban population 17 years old and over by occupation in 1966, and percentage of rural-urban migrants, by selected characteristics, South and non-South, 1967

Sex and major occupational group	Urban South[a]			Urban non-South[a]		
		Rural-urban migrants			Rural-urban migrants	
	Total	Total	Within South	Total	Total	To non-South
	Thousands	*Percent*	*Percent*	*Thousands*	*Percent*	*Percent*
Males:						
Professional, technical, and kindred workers	44	--	--	83	15.7	9.6
Managers, officials, and proprietors	42	--	--	56	26.8	25.0
Clerical and kindred workers	84	16.7	15.5	188	14.9	10.6
Sales workers	12	--	--	34	--	--
Total white-collar	182	15.4	13.7	361	16.1	12.2
Craftsmen, foremen, and kindred workers	180	23.3	22.2	270	18.8	17.8
Operatives	372	26.9	24.5	579	28.5	26.9
Private household workers	1	--	--	1	--	--
Service, except private household	260	22.7	20.8	290	25.2	23.8
Laborers, except farm and mine	372	27.2	26.1	319	25.4	23.8
Total reporting employment[b]	1,404	24.3	22.6	1,876	23.3	21.4
Females:						
Professional, technical, and kindred workers	98	19.4	19.4	102	9.8	9.8
Managers, officials, and proprietors	13	--	--	16	--	--
Clerical and kindred workers	138	14.5	11.6	410	9.8	8.0
Sales workers	34	--	--	49	--	--
Total white-collar	283	16.5	15.1	577	10.9	9.7
Craftsmen, foremen, and kindred workers	6	--	--	20	--	--
Operatives	153	13.1	12.4	355	27.3	25.9
Private household workers	480	28.5	27.5	263	30.5	28.5
Service, except private household	368	19.3	18.5	442	19.0	17.4
Laborers, except farm and mine	6	--	--	31	--	--
Total reporting employment[b]	1,331	21.6	20.6	1,715	19.8	18.3

[a]Persons with initial residence outside the United States omitted.
[b]Includes persons with farm occupations and persons not reporting occupation.

Source: 1967 Survey of Economic Opportunity.

too, for those occupations where the base was large enough for comparisons to be made, most occupational groups did not vary significantly from the total share. For Negro males, the combination of white-collar occupations did have a lower share of rural-urban migrants. Among Negro females the variant groups were operatives, with a deficit, and private household workers, with a surplus. Thus, in comparison with other urban persons of the same race, rural-urban migrants tended very much to contribute what might be termed a fair share to the Southern urban occupational structure.

Virtually all the Negro rural-urban migrants in the South in 1967 had originated in that region. For whites, three types of rural-urban migrants were distinguishable—those whose moves took place within the South, those returning to the South after an intermediate residence in the non-South, and those who had an initial residence in the non-South. By far the most important group were migrants from within the South itself, comprising as they did three-fourths of the total. Intraregional white males had shares of every occupational group which were generally proportionate to their shares of all employed white males. The same was true for white intraregional migrant females, but this class of migrant comprised a third of all white female private household workers. Return migrants and in-migrants were less important numerically and they also tended to be found in proportionate numbers in each occupational group. An exception was professional workers, who comprised a third of the white male in-migrants. These migrants contributed 8 percent of all white male professionals in the urban South in 1967.

The Non-South

The position of rural-urban migrants in the non-South was different in several ways. For one thing, they comprised a smaller proportion of all urban employed persons than in the South. This tended to be true of each occupational group as well. This occurred because rural-urban migrants from the non-South were proportionately less than intraregional migrants were within the South. A large share of this difference reflected the fact that the non-South had few rural Negroes from which to attract urban migrants, but there were proportionately fewer whites as well. The differences between the South and the non-South would also have been greater if the South had not exported more migrants than it received. Even though they entered a much larger region, in-migrants from the South comprised almost a quarter of all rural-urban migrants in the non-South and their share among all employed workers was larger than that held by non-Southerners in the South. Like the South, however, rural-urban migrants as a group tended to hold proportionate shares of most occupational classes. Exceptions were clerical and sales workers, for which there were deficits.

White rural-urban migrants outside the South, whether male or female and no matter what their regional history, were found in proportions which were usually not significantly more nor less than their respective share of all employed persons of the same race and sex. White operatives of Southern origin were an exception. They totaled over 400,000 and accounted for about one in 20 of the non-Southern urban operatives.

To be a Negro rural-urban migrant meant to be from the South. Very nearly a fourth of the Negro males and a fifth of the Negro females in the non-South who reported employment were rural-urban migrants. Furthermore, these proportions for the non-South were little different from the proportions within the South itself. Nor was there any occupational group of Negro males, except white-collar workers, whose share differed from its share of the total employed group, and shares were little different from the same occupational group in the South. In other words, rural-urban migrant Negro males, whether they stayed in the South or left, provided proportional shares in all except white collar occupations when compared with all Negro males in the same area. Negro females were less fortunate. In the urban non-South, they comprised a smaller than proportionate share of white collar workers and a larger than proportionate share of both operatives and private household workers. In comparison with their Southern counterparts, they were at less of a disadvantage. Except among operatives, where the comparison favored the non-South, their share of each occupational grouping was about the same in the South as in the non-South.

Comparisons with Other Data

Since these data reflect lifetime migration histories, it can be argued that the rural-urban migrants had had time to adjust to life in urban places and hence their tendency for equal shares in each occupation. Two-thirds of those aged 30-49 had been residents of urban areas before 1960.[4] Questioned at some time closer to their leaving the rural sector, migrants might well have been more disadvantaged in their occupations. To examine this, comparable data were assembled insofar as possible for 1935-40, the only census for which data on rural-urban migration are available. These figures are shown in table 6, for total males and females. No racial data were

[4] Ibid., table 28.

published. Migration here is measured in terms of residence in another country 5 years before the census, and occupation was that in the week preceding the census.

These data, taken decades ago and using a different definition of migration, generally substantiate the 1967 findings. Given the shorter period for migrating, rural-urban migrants were less important in the total structure in 1940. Still, the evidence is that they were more important in the South than in the non-South, and that no occupation with the possible exception of domestic service in the non-South was disproportionately composed of rural-urban migrants. This same pattern held when males were compared with males and females with females in each region. For females, however, there appeared to be an excess of rural-urban migrant professional workers in both the South and the non-South, as well as the excess of domestic service workers in the non-South. Also, in this earlier period Southern-origin migrants comprised a less important part of the rural-urban migrants in the non-South. In all, 12 percent of the non-South's migrants had come from the South, a proportion that was little higher than that for non-Southerners in the South. Two factors are probably at work here—the heavy out-migration from the North Central States during the 1930's and the diminished role of Negro migration before World War II.

One problem, of course, is that both the SEO data and the 1940 data lack any information about occupation either before or at the time of migration. National

Table 6. Urban population 14 years old and over by major occupation group, and percentage of rural-urban migrants, by selected characteristics, South and non-South, 1940

Sex and major occupational group	Urban South				Urban non-South			
		Rural-urban migrants				Rural-urban migrants		
	Total	Total	Within South	To South	Total	Total	Within Non-South	To Non-South
	Thousands	*Percent*	*Percent*	*Percent*	*Thousands*	*Percent*	*Percent*	*Percent*
Males:								
Professional and semiprofessional workers	278	7.7	6.1	1.6	1,148	3.7	3.4	0.3
Proprietors, managers, and officials, except farm	517	4.3	3.7	0.6	1,899	2.1	1.9	0.2
Clerical, sales, and kindred workers	717	6.0	5.2	0.8	2,895	2.5	2.3	0.2
Craftsmen, foremen, and kindred workers	647	6.5	5.8	0.7	2,946	2.6	2.3	0.3
Operatives and kindred workers	778	8.1	7.5	0.6	3,483	3.0	2.6	0.4
Domestic service workers	48	5.0	4.8	0.2	47	4.7	3.1	1.6
Service workers, except domestic	380	7.1	6.3	0.8	1,353	3.6	2.8	0.8
Laborers, except farm, and occupation not reported	480	7.2	6.9	0.3	1,460	3.4	2.8	0.6
Total employed workers	3,912	6.7	6.0	0.7	15,366	2.9	2.5	0.4
Females:								
Professional and semiprofessional workers	222	10.1	9.1	1.0	829	5.7	5.4	0.3
Proprietors, managers, and officials, except farm	67	3.7	3.2	0.5	237	2.3	2.1	0.2
Clerical, sales, and kindred workers	509	5.6	4.9	0.7	2,193	2.3	2.2	0.1
Craftsmen, foremen, and kindred workers	14	4.0	3.6	0.4	77	1.6	1.4	0.2
Operatives and kindred workers	305	6.0	5.8	0.2	1,328	1.7	1.5	0.2
Domestic service workers	555	6.2	5.9	0.3	808	8.6	7.2	1.4
Service workers, except domestic	240	8.4	7.8	0.6	762	5.5	4.9	0.6
Laborers, except farm, and occupation not reported	31	6.0	5.6	0.4	123	3.0	2.7	0.3
Total employed workers	1,949	6.7	6.2	0.5	6,365	3.8	3.4	0.4

Source: U.S. Bureau of the Census. *Sixteenth Census of the United States: 1940. Population. Internal Migration, 1935 to 1940. Economic Characteristics of Migrants* (Washington: U.S. Government Printing Office, 1946), tables 5, 9, and 10.

data on occupational and geographic mobility from the 1970 Census[5] indicate that persons living in different States in 1965 and 1970 were more likely to report a different occupation than those living in the same State. The range among occupations, however, was wide and the proportion reporting the same occupation at the later date tended to increase as occupational status increased. The extent, then, to which rural-urban migration was a concomitant of occupational mobility cannot be determined with data currently available in national surveys or censuses, but might be a fruitful avenue for research in the future.

Summary and Conclusions

These findings, then, tend to refute the idea that rural-urban migrants contribute unduly to the lowest status occupations. The only evidence to support the idea was the excessive contribution of female rural-urban migrants, white and Negro alike, to private household or domestic service. Indeed, rural places had supplied close to a third of the urban private household workers in 1967 and this group was evenly divided between the two racial groups. At the upper end of the occupational scale, there was little to indicate that rural-urban migrants were underrepresented and there was some evidence that professional workers in particular might include a slight excess of rural-urban migrants.

This attainment of proportionate shares of most urban occupations can be regarded to some extent as a measure of assimilation for rural-urban migrants. In the case of Southern-origin migrants to the non-South, this level of assimilation was truly remarkable in light of the large proportions whose educations ended in elementary school. In 1967, not quite two-fifths of the white and half the Negro migrants from the rural South to urban non-South had completed 8 years of school or less, proportions which were well above those of the urban populations they joined. Despite this, less than 19 percent of the whites and 42 percent of the Negroes held jobs which were classed as service or laborer. Moreover, their relative success occupationally helps account for the fact that rural-urban migrants were about as likely to be in poverty as the urban population of urban origin.

Note, however, that only broad occupational classes were compared. We do not know the extent to which rural-urban migrants were concentrated in specific occupations within those categories in which incomes are higher or lower than the average.

While this paper has focused on the urban occupational structure, there are implications for rural areas as well. Even though rural-urban migrants may have had some handicaps in comparison with the urban population, they compared favorably with persons who never left rural areas. Their relative occupational success in urban areas indicates that, as a group, these migrants had considerable capability. Whether or not they attained their occupational skills in rural areas before leaving or in urban areas after migration could not be ascertained. Some of these demonstrated skills, however, can be regarded as movable assets which could be transferred back to developing rural areas, given the proper incentives. There has been a demonstrated potential for rural return migration. Data from the Survey of Economic Opportunity indicate that as many as one out of every five persons who had migrated to urban areas was back in a rural area in 1967. Rural development programs then might well consider rural-urban migrants a trained manpower pool which could be tapped to provide leadership with both urban experience and an understanding of rural problems.

[5] U.S. Bureau of the Census, *Census of Population: 1970, Detailed Characteristics*, Final Report PC(1)-D 1, United States Summary (Washington, D.C.: U.S. Government Printing Office, 1973), table 230.

AGRICULTURAL ECONOMICS RESEARCH VOL. 26, NO. 2, APRIL 1974

Minimum Wage Legislation and Farm Financial Structure

By David A. Lins

Minimum wage legislation which results in higher average wage rates for farm laborers would affect the asset structure and income flows of farm operators. A simulation model of financial structure of the farm sector is used to show that higher wage rates would result in increased nonreal estate assets and debt relative to real estate assets and debt. Proprietors' equities would decline. Simulation results indicated that reductions in net farm income due to higher wage rates would be partially offset by higher nonfarm income of farm operators and their families.

Keywords: Agricultural labor, Income sources, Minimum wages, Simulation, Balance sheet.

Proposed minimum wage laws for hired farm laborers have generated much public debate. Numerous bills which would affect coverage and wage rates for hired farm labor have been introduced in Congress. For a comprehensive summary of legislation recently enacted or considered, see (*16*). The common feature of all these bills is that average wages rates would be increased. Several studies (*3*, *4*, *6*) have been directed toward determining how such legislation might affect the welfare position of hired labor, the total amount of labor used in farming, and the composition of the labor force. The purpose of this research is to estimate the effect of such legislation on the financial structure of the farm sector.

Short- and Long-Run Considerations

Short-run economic consequences of minimum wage legislation for hired farm labor can be depicted as in figures 1 through 3. Figure 1 represents the factor market for hired farm labor. The hired farm labor market is in equilibrium where the demand for labor (D_L) intersects the supply of labor (S_L) resulting in quantity (Q_o) and a wage rate of (P_o). Enactment of minimum wage legislation imposes an artificially determined wage rate, such as (P_1). Demand for hired farm labor is reduced to Q_1, and $0Q_o$ - $0Q_1$ hired farm laborers would be displaced. If the demand for hired labor is inelastic, the total wage income of the remaining hired laborers will increase.

Figure 2 represents the profit maximizing combination of capital and labor inputs for the farm firm. Given the budget constraint line B/P_k - B/P_o, the firm would produce Q_o output using L_o labor and K_o capital. If the wage rate increased from P_o to P_1 (as shown in figure 1), the firm's budget constraint line becomes B/P_k - B/P_1 and output declines to Q_1.

Figure 3 represents the product market for aggregate farm output. If the firm's response to the increased wage rate is to reduce output, then the aggregate supply curve would shift to the left (S_o to S_1). If the demand for aggregate output is inelastic, total gross income would increase as a result of the reduction in aggregate supply. To summarize, short-run static equilibrium analysis as depicted in figures 1 to 3 suggests that given an inelastic demand for both hired labor and aggregate output, higher wage rates for hired farm labor would reduce the quantity of hired labor employed and increase aggregate gross farm income.

The short-run static analysis suggested by figures 1 to 3 overlooks several key factors. First, the reduction in output suggested by figure 2 is predicated on the assumption that total expenditures remain unchanged. Yet in a longer run context it is possible to increase total expenditures through increased levels of borrowing, which in turn can lead to a higher level of capital stocks. Second, the substitution of family labor for hired farm labor is ignored in figure 2. Third, Coffey (*2*, p. 1065) suggests that one of the dynamic impacts of higher wage rates may be to increase worker productivity. All three factors imply a greater level of output than suggested by short-run analysis. Therefore, in a dynamic context it is not necessarily true that increased wage rates will decrease total output.

There are also numerous secondary impacts which are not specifically accounted for by short-run analysis. Capital-labor substitution can affect interest expenses (if purchases are financed with borrowed funds), taxes on farm property, and the income level of operators. A reduction in income can lead to an alteration of capital

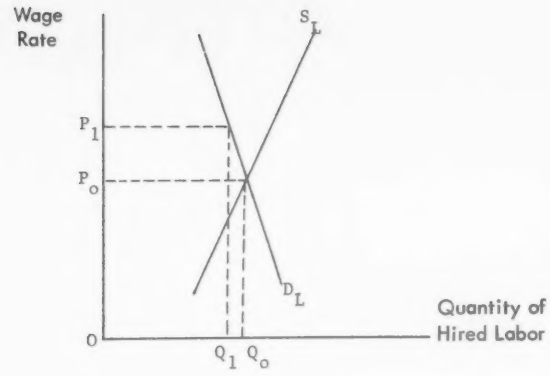

Figure 1

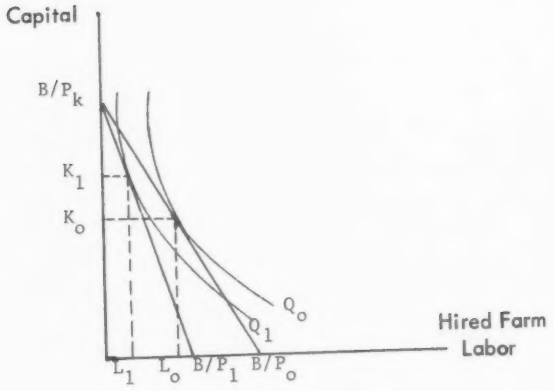

Figure 2

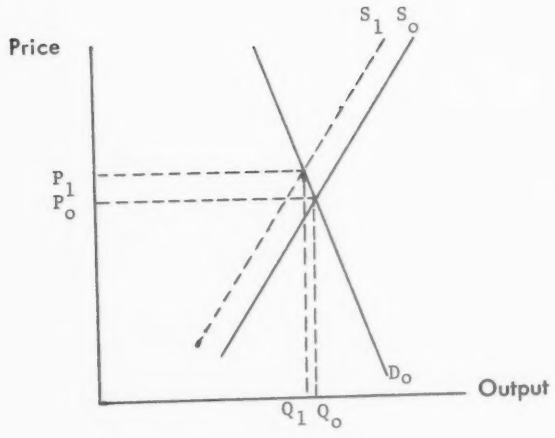

Figure 3

appreciation of real estate assets which in turn may affect real estate debt. Estimation of these longer range dynamic impacts could provide a better framework for analysis of proposed legislation.

Recently Lins (*7*, *8*) developed a simulation model of financial structure in the farm sector. The model can be used to generate a simulated farm income statement, balance sheet, and sources and uses of funds statement for the number of years specified by the user. The model is composed of an interrelated system of equations, several of which contain the wage rate for hired farm labor, the quantity of operator and family farm labor used, and the quantity of hired labor as explanatory variables.[1] It provides a useful vehicle for analyzing long-run dynamic impacts of minimum wage legislation on financial structure of the farm sector.

Method of Analysis

The wage rate employed in the Lins simulation model is the average cash wage rate for hired farm labor not including room and board. Hence one needs an estimate of the impact of minimum wage legislation on the *average* wage rate, not just the wage rate for directly affected workers. Morgan (*9*, p. 584) suggests that the short-run effect of increasing the lowest wage rates by legislation is to narrow the wage differential; but the wage differential that existed before increasing the lowest wage rates is often restored within 1 or 2 years. Therefore, rather than attempting to analyze any specific proposed minimum wage rates, the analysis here focuses on an assumed percentage increase in the *average* cash wage rates resulting from minimum wage legislation.

Counterfactual simulation was used to test the impact of higher wage rates for hired farm labor on farm financial structure. For this procedure the model was run first for 1960 through 1970, using reported values for all exogenous variables. Then it was assumed that the *average* wage rate for hired farm labor was 10 percent per year higher because of minimum wage legislation.[2] The modified model was rerun for 1960-70. A comparison of these two simulation runs provides the basis for determining how financial structure of the farm sector would

[1] These equations include the demand for farm machinery and equipment, the demand equations for nonreal estate debt, and the per capita nonfarm income of farm operators. Details of the model are too extensive to report here. See (*8*) for a complete description of the model.

[2] The assumed 10-percent increase in wage rates is in addition to any increases caused by the Federal Fair Labor Standards Act, which extended coverage to an estimated 384,000 hired farmworkers in 1966.

have been altered by minimum wage legislation which caused average farm wage rates to rise by 10 percent.[3]

Elasticity Assumptions

Using data for 1929-61, Tyrchniewicz and Schuh (*12*) estimated the short- and long-run price elasticities of demand for hired farm labor to be -0.26 and -0.49 respectively. Later work by Hammonds, Yadav, and Vathana (*5*, p. 6) indicates that the elasticity is increasing over time, and for 1941-69 they estimate the short- and long-run elasticities to be -0.85 and -1.05 respectively. For simulation purposes a price elasticity of demand of -0.90 is arbitrarily assumed here.[4]

Tyrchniewicz and Schuh also estimated the substitution elasticity of hired labor for operator and family labor. They found that a 1 percent decrease in hired farm labor would increase operator labor by 0.2 percent. To the author's knowledge this is the only reported estimate of the elasticity of substitution. Therefore an elasticity of substitution of hired labor for operator labor of -0.20 is used here.

Given the above assumptions, table 1 indicates the extent that increasing the hired farm labor wage rates by 10 percent would increase total usage of operator and family labor, and decrease hired labor and total hours of labor used in agriculture. Note the partial substitution of operator and family labor for hired labor. The general direction of these changes is supported by the work of Gardner (*4*) and Lianos (*6*).

The total hours of labor used in farming are shown to decline by over 1 percent per year in response to a 10 percent per year increase in hired labor wage rates. However, another response to increased wage rates is to increase machinery inputs. Thus the effect on total output depends upon the relative changes in labor and machinery inputs and the elasticity of substitution between the two. Tweeten and Quance (*10*, p. 350) have found an elasticity of aggregate farm production for machinery of 0.10 and an elasticity of aggregate farm production for labor of 0.25. This implies that a 1 percent decline in labor could be offset by a 2.5 percent increase in machinery inputs. The level of machinery inputs is determined by the equations within the model, while the level of labor inputs is shown in table 1. Combining this information with the elasticity of substitution implied by the work of Tweeten and Quance, one can estimate within the simulation model the impact on aggregate output due to the assumed increase in wage rates.

Given a change (positive or negative) in the level of aggregate output, prices received for farm products are likely to be altered. To determine the extent of this change one needs an estimate of the price elasticity of demand for aggregate farm output. Tyner and Tweeten (*11*) have estimated this elasticity at -0.30. That value is used here.

Simulation Results

A comparison of balance sheets simulated under reported wage rates and the assumed wage rates is presented in table 2. The simulated balance sheets are presented as of January 1, 1971, an 11-year period after assumed wage rates were in effect. Virtually all farm sector balance sheet items are affected.

As one would expect, the largest impacts are on stocks of machinery and motor vehicles and nonreal estate debt. The value of machinery and motor vehicle stocks was estimated to be $2.06 billion, or 5.60 percent higher under the assumed wage rates. The greater value of machinery and motor vehicles reflects the substitution of capital for labor. Nonreal estate debt was estimated to be $2.0 billion, or 6.01 percent higher under assumed wage rates. The large increase in debt was needed not only to finance larger stocks of machinery, but also to meet higher operating expenses resulting from higher labor costs.

The value of farm real estate assets was estimated to be $2.86 billion, or 1.32 percent lower under assumed wage rates. This reflects a lower level of capital appreciation in response to lower levels of net farm income. Real estate debt was estimated to be $0.46 billion, or 1.55 percent lower under assumed wage rates. This reflects a lower level of borrowing because of lower real estate prices. In addition there is some substitution of nonreal estate debt for real estate debt.

Changes in financial assets were very minimal. However, household equipment and furnishings were estimated to decline by 2.67 percent. Again, this is in response to the lower level of net farm income obtained by farm operators. Crop and livestock inventories also declined slightly. This is due primarily to changes in the prices at which inventories are valued.

One of the key variables in assessing the impact of the assumed wage rates is the effect on proprietors' equities. Proprietors' equities were $3.03 billion, or 1.18 percent lower under the assumed wage rates. Thus the *farm* wealth of farm proprietors is estimated to be slightly more than 1 percent lower due to 10 percent higher wage rates for hired farm labor.

[3] Because the simulation model is constructed from linear regression estimates, linear approximations to other percentage changes in wage rates can be easily derived from the results presented here.

[4] A later section examines this assumption in more detail.

Table 1. Reported and assumed wage rates and hours of labor used in agriculture, 1960-70

Year	Cash wage rate not including room and board		Man-hours of hired farm labor		Man-hours of operator and family farm labor		Total hours of labor used in farming	
	Reported[a]	Assumed	Estimated[b]	Assumed[c]	Estimated[d]	Assumed[e]	Reported[f]	Assumed
	Dollars per hour		*Million hours*		*Million hours*		*Million hours*	
1960	0.970	1.067	2,682	2,441	7,113	7,241	9,795	9,682
1961	0.990	1.089	2,680	2,439	6,720	6,841	9,400	9,280
1962	1.010	1.111	2,615	2,380	6,364	6,479	8,979	8,859
1963	1.050	1.155	2,533	2,305	6,131	6,242	8,664	8,547
1964	1.080	1.188	2,409	2,192	5,785	5,889	8,194	8,081
1965	1.140	1.254	2,239	2,037	5,536	5,636	7,775	7,673
1966	1.230	1.353	2,098	1,909	5,283	5,378	7,381	7,287
1967	1.330	1.463	1,932	1,758	5,337	5,433	7,269	7,191
1968	1.440	1.584	1,903	1,732	5,102	5,194	7,005	6,926
1969	1.550	1.705	1,919	1,746	4,776	4,862	6,695	6,608
1970	1.640	1.804	2,022	1,840	4,500	4,581	6,522	6,421

[a]Source: *Farm Cost Situation* (*14*).
[b]Estimated by dividing total cash wages to hired farm labor reported in (*15*) by the reported cash wage rate.
[c]Based on an estimated price elasticity of demand for hired farm labor of -0.90.
[d]Total hours of labor used in agriculture minus the estimated man hours of hired farm labor.
[e]Based upon an estimated elasticity of substitution of -0.20.
[f]Source: *Agricultural Statistics* (*13*).

Balance sheet items indicate only a part of the impact on financial structure due to the assumed wage rates. Flow items should also be considered in evaluating impacts on financial structure. The simulation model estimates a farm income statement and sources-and-uses-of-funds statement in addition to the balance sheet. The most meaningful method of assessing flow items represented in these accounts is to sum them over the 11-year period simulated rather than presenting them for any one specific year. A comparison of selected flow items simulated under reported wage rates and assumed wage rates is presented in table 3.

As shown in table 3, total gross farm income summed over the 11-year period decreased by $1,804 million, or 0.34 percent, as a result of a 10 percent higher wage rate. Because an inelastic demand for farm output was assumed, this indicates that aggregate farm output increased slightly. This is accounted for by the fact that higher levels of machinery inputs more than offset the decline in labor inputs. While gross farm income was only 0.34 percent lower, net farm income was estimated to decline by $5,909 million, or 3.69 percent, under assumed wage rates. As one would expect, capital expenditures on nonreal estate assets and depreciation of farm machinery rose in response to the higher level of machinery stocks employed in the production process.

Nonfarm income of the farm population was estimated to increase $2,787 million, or 2.54 percent, under the assumed wage rates. This suggests that to offset the decline in net farm income, farm operators or their families obtained more nonfarm income. Thus more hours of operator and family labor were devoted to nonfarm occupations. Given that farm operator and family *farm* labor also increased (see table 1), the imposition of minimum wage rates for hired farm labor could substantially increase the total hours of labor performed by farm operators and their families.

Another important flow item is the level of proprietor withdrawals. This flow represents the expenditures of farm operators for consumption items, income taxes, nonfarm investments, and *other nonfarm* uses. Proprietor withdrawals declined by $2,508 million, indicating that farm proprietors partially offset the decline in net farm income due to higher wage rates by lowering the level of their own consumption, nonfarm investments, etc. Reductions in proprietor withdrawals offset roughly 42.4 percent of the decline in net farm income. Thus the assumed wage rates would have had much more serious consequences for farm operators than is implied when viewed solely from a balance sheet context.

Sensitivity to Elasticity of Demand for Hired Labor

The estimates in tables 2 and 3 are based on a given set of elasticity assumptions. Of particular interest is the

Table 2. Simulated balance sheets for the farm sector as of January 1, 1971, under reported and assumed wage rates

Item	Simulated under reported wage rates	Simulated under assumed wage rates	Difference
	Billion dollars	*Billion dollars*	*Percent*
Physical assets:			
Real estate	217.37	214.51	-1.32
Nonreal estate	78.21	79.63	1.82
Crops and livestock	30.60	30.25	-1.14
Machinery and motor vehicles	36.78	38.84	5.60
Household equipment and furnishings	10.83	10.54	-2.67
Financial assets:	23.84	23.80	-0.17
Demand deposits and currency	6.58	6.57	-0.02
Time and savings deposits	6.06	6.08	0.33
Other reported	11.20	11.20	0.00
Total assets	319.42	317.94	-0.46
Liabilities:			
Real estate debt	29.71	29.25	-1.55
Nonreal estate debt	33.26	35.26	6.01
Proprietors' equities	256.45	253.42	-1.18
Total liabilities	319.42	317.94	-0.46

Table 3. Selected flow items simulated under reported and assumed wage rates

Flow items summed over 11 years, 1960-70	Simulated under reported wage rates	Simulated under assumed wage rates	Difference
	Million dollars	*Million dollars*	*Percent*
Gross farm income	515,883	514,079	-0.34
Total net farm income	160,222	154,313	-3.69
Total nonfarm income of farm population	109,665	112,452	2.54
Taxes on farm property	22,889	22,906	0.07
Depreciation of farm machinery	41,280	43,090	4.38
Capital expenditures on nonreal estate assets	55,858	59,740	6.95
Current operating expenses	261,403	264,223	1.08
Proprietor withdrawals	269,449	266,941	-0.93

assumed elasticity of demand for hired labor. This estimate has received much attention in the literature because it is of vital importance in determining the consequences to hired laborers due to alteration of wage rates. Some rather wide divergences in published estimates of this elasticity coefficient exist. Tyrchniecwicz and Schuh have estimated the elasticity of demand for labor at -0.29 (-0.49 in the long run), while Bauer (*1*) estimated the coefficient at -1.482.

To test the sensitivity of results in tables 2 and 3 to the assumed elasticity of demand for hired labor, the model was rerun using alternative levels of elasticities of demand for hired labor. All other elasticity assumptions were unchanged. Results are presented in table 4.

As shown in table 4, gross and net farm incomes, as well as proprietors' equities, increase as the demand for hired labor becomes more elastic. Because of the higher income levels, capital appreciation on farm real estate also increases as demand becomes more elastic. Thus, in the aggregate, farm operators appear to be better off the more elastic is the demand for hired labor. Besides income, most other flow items are only affected slightly by changes in the assumed elasticity of demand. Proprietor withdrawals remained virtually constant over the range of elasticity estimates tested.[5]

Other Considerations

The aggregate nature of the simulation model used for this analysis precludes a geographical determination of the impacts of minimum wage legislation on financial structure of the farm sector. Yet regional differences are likely to be important. For example, Ferguson (*3*, p. 20) points out that: "... total inclusion of all farm workers under the Fair Labor Standards Act would substantially affect the costs on farms in the South more than any other area." This results from the low average wage rate for hired farm labor in the South compared with proposed minimum wage rates.

Differences by type of farm are also likely to be important. Ferguson (*3*, p. 10) states that:

> "Four types of farms dominate U.S. agriculture—cash grain, tobacco, dairy, and other livestock (dairy and poultry excluded). These four types represent 77 percent of the farms that used hired labor in 1970, but employed only 16 percent of the hired farm workers covered under the Fair Labor Standards Act (FLSA) during the May 16-22, 1971 survey week. At the other end of the scale, vegetable, fruit and nut, and miscellaneous farms represented only 10 percent of the farms hiring labor, but employed 63 percent of hired farmworkers covered under FLSA during the May 1971 survey week."

Thus, if all hired farmworkers were to be covered, cash grain, dairy, tobacco, and other livestock farms would probably feel the greatest impact. Also, since farms which used over 500 man-days of hired farm labor in any quarter of the preceding year were covered starting in 1967, inclusion of *all* hired farm workers now would probably be most seriously felt by operators using smaller amounts of hired labor.

In conclusion, many different facets of financial structure would be affected by minimum wage legislation which raises average wage rates for hired farmworkers. Nonreal estate assets and debts would be likely to increase relative to real estate assets and debt. Proprietors' equities would probably not be largely affected. Proprietors' net farm income would be likely to decline. This decline would be partially offset by higher nonfarm income and reductions in farm proprietor withdrawals. Differences in impacts would probably depend on geographic region and type of farm.

[5] The sensitivity of the model estimates to the other elasticity assumptions could be evaluated in a similar manner. However, the relevant range of elasticities to be tested should come from other studies.

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Table 4. Simulated balance sheet as of January 1, 1971, with three assumed elasticities of demand for hired farm labor

Item	Elasticity of demand for hired farm labor		
	-0.40	[a]-0.90	-1.40
	Billion dollars	*Billion dollars*	*Billion dollars*
Assets:			
Real estate	211.56	214.51	217.40
Nonreal estate	79.72	79.63	80.19
Crops and livestock	30.50	30.25	30.61
Machinery and motor vehicles	38.74	38.84	38.96
Household equipment and furnishings	10.48	10.54	10.61
Financial assets	23.72	23.80	23.88
Demand deposits and currency	6.55	6.57	6.59
Time and savings deposits	5.98	6.08	6.09
Other reported	11.20	11.20	11.20
Total assets	315.00	317.94	321.46
Liabilities:			
Real estate debt	29.19	29.25	29.32
Nonreal estate debt	35.35	35.26	35.18
Proprietors equities	250.47	253.42	256.96
Total liabilities	315.00	317.94	321.46
Flow items 1960-70:			
Gross farm income	512.44	514.08	516.25
Net farm income	152.79	154.31	156.11
Nonfarm income of the farm population	114.77	112.45	111.70
Taxes on farm property	22.67	22.91	23.17
Depreciation of farm machinery	42.99	43.09	43.18
Capital expenditures on nonreal estate assets	59.54	59.74	59.94
Current operating expenses	264.47	264.22	264.19
Proprietor withdrawals	266.84	266.94	266.45

[a]From tables 2 and 3.

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The Role of Competitive Market Institutions[1]

By Allen B. Paul

Continuous reorganization of markets is implied by the process of economic growth, wherein specialization, enlargement of scale, and applications of technology keep marching onward. Under a regime of private property, there are continual adaptations of different means for mobilizing capital that are more or less appropriate to different situations—means that mitigate the hazards of loss to the individual or firm. In agriculture, a host of enterprise-sharing arrangements have developed. These should be separated into ones that result in meaningful market prices and ones that merely divide up the residual rewards. A number of market tendencies and problems are noted.

Keywords: Competitive market; Competition; Economic growth; Contracts; Forward trading; Futures trading; Joint accounts.

The state of competition in agricultural markets seems to require continued study and debate. This paper explores the role of competitive market institutions in the agricultural sector in the context of economic growth—a vantage point that deserves more attention.

Different Theories of Markets

The usual approach to the study of competition uses models grounded in static equilibrium theory. One need not argue that agricultural markets are or ever have been competitive in the usual textbook sense to find such models useful. They often guide analysis through the economic maze of commodity markets and offer good results (*3*).

But for our purposes, the nature of competition and pricing, and the problems they pose, probably can be understood better in the context of economic growth and market expansion. We are concerned with markets in disequilibrium rather than equilibrium. Such disequilibrium is an essential feature of an expanding economy. We seek a continuous process by which change in market organization is generated. The assumptions of static equilibrium theory do not lead us down this path.

The processes of economic growth are complex and somewhat intractible to analysis. Yet one outstanding trait suggests an insight. Viewed over a long period, economic growth under a regime of private property has shown a momentum of its own. Kuznets (*9*) concludes that over the past century, the real product of the non-Communist developed countries has increased 15-fold; per capita product, 5-fold; and population, 3-fold. These rates are general and they seem far in excess of anything that had occurred in earlier centuries.

The momentum of economic growth can be partially understood in terms of the continuous unfolding of scientific discoveries, the cumulation of the stock of useful knowledge, and its widening applications. Yet scientific knowledge had been accumulating in earlier centuries without dramatic effects on economic life. Why? According to Hicks (*7*), increases in the level of real wages came only after machines could be made by other machines rather than by hand. This set in motion a process of continual improvement in the quality of machines and a lowering of their unit cost. Thus more and better machinery could be supplied without additional savings out of current income. Wage earners could garner the fruits of technological advance and therewith provide a continually growing market for output.

The Process of Market Reorganization

Whatever the merits of this explanation of sustainable growth, our interest here is in the reorganization of markets that is implied by such growth. The reorganization must occur on two levels, one "real" (commodities, machines, land, labor), the other institutional (customs, procedures, rules and regulations affecting property ownership and exchange).

Growth implies a continued reorganization of production by more efficient methods. The lowering of unit costs in an industry is associated with expansion of its output, or release of resources to other industries. As one industry expands, it therewith furnishes a larger market for the output of other industries, which then find it feasible to further rationalize their own produc-

Notes are on page 47.

tion. The latter industries either grow or release resources. If they grow, they furnish enlarged markets to still others. If not, the released resources enter other employments and expand output. And so the process feeds on itself with potentials for specialization, economies of scale, and applications of technology to become heightened in various places. Industry after industry becomes caught up in the need to modernize, write off old equipment, retrain personnel, make different products, and so on—or it will eventually decline.[2]

The process of growth exposes the individual (or firm) to large hazards. Encroachment on his economic opportunities may arise from substitute products, processes, or modes of business. When this occurs, he must consider whether to further specialize, invest in new equipment and knowledge, or change activity.

Big firms may have more staying power but they do not escape. On such issues Galbraith (*4*) concluded that the competitive market is obsolete. Market uncertainties are intolerable to the firm that must carry out a technically difficult and costly set of operations to bring its products to market. Instead, the firm must decide on a price line and then hold to it, if necessary, by more promotion and advertising.

There is some validity to this view—even in the food industry—but it can be misleading. Big firms are not as much in control of markets as this view supposes. A mechanism is needed to insure consistency of individual plans. This is what market prices are about. It would be quite accidental that each firm could by itself decide on the right price for its output and hold to it for long. Even acting jointly they may not do well. The biggest economic units—national governments—have suggested this by abandoning fixed currency values in favor of floating values. It is possible that they are not in sufficient control of basic economic forces, nor able to predict them well enough, to set a price line that will hold for long. The more financial reserves at the command of the firm, the longer it can hold to its price. But sooner or later it will divert products to less profitable outlets, deal off list, offer more for the money, reset its schedule of prices, or lose out to other firms that do so.

It may now be evident that here we attach another meaning to competition than that given in static equilibrium theory. We recognize that many firms have some degree of market jurisdiction (socially acceptable or otherwise) but do not imply by this that they necessarily have strong control over their destiny. In this sense a competitive market is one in which the forces over which a firm has no control greatly exceed those over which it has control. Here, trade occurs largely at prices that the firm must sooner or later accept.[3]

The principal technique for individual survival is to divide up the financial commitment to any hazardous undertaking and share it with others. The preponderant share of one's capital ordinarily must not be tied up in one venture. The larger the scale of production, the more capital is required, hence the more urgent the need to devise suitable ways to spread out the economic responsibility in order to mobilize the necessary capital.

There are two separate though not mutually exclusive routes to mobilize capital through enterprise sharing. One, of course, is the pooling of sufficient capital under the command of a single economic unit to survive the most hazardous ventures that the managers may elect. Syndicates, partnerships, and corporations—in their various forms—are the main arrangements. Cooperatives, for example, are partnership or corporate units whose distinguishing mark is that residual rewards go primarily to (or are reserved for) patrons of the enterprise who also are its main owners.

The other route is to bind sufficient capital to a specified course of production by voluntary agreements among sovereign economic units. Joint-account production, contract farming, forward purchases, participation agreements, and organized futures trading are the usual instruments. It is beyond the scope of this paper to compare the merits and survival power of the two different routes for mobilizing capital. I only need to point out that any deal between two sovereign economic units implies that a mutually determined exchange has occurred. In the real world, this is what a market is about, whatever its complexities, strengths, or deficiencies.

In addition to the emergence of these private market arrangements for mobilizing capital, various public means have emerged for fostering investment—price and income supports, tax concessions, underwriting of loans, and so forth. Indeed, the Employment Act of 1946, declaring that it is the continuing policy of Government to promote maximum employment, production, and purchasing power, as much as anything signaled the beginning of wider public acceptance of responsibility for mitigating pervasive economic hazards.

Both public and private means for mitigating hazards of loss have this in common: They amount to a "pooling of risk." But there is an important interaction between them. The more public assurances that are devised, the more the encouragement to private investment for new products, processes, or modes of business wherein there are hazards specific to the undertaking. Put another way, the pursuit of the untried is encouraged by freeing of venture capital from financing projects that now appear sure-fire, by substituting loan capital.[4]

This appears to lead to an interdependent process on

the financial side which is one of the self-reinforcing mechanisms of economic growth: Private ventures into new realms promote the growth of output, growth of output tends to promote the spread of public measures that allow more individuals to escape big economic hazards, and this, in turn, tends to promote more private investment in new realms.

Status of Competitive Pricing in Agriculture

What is new about present contractual arrangements in the agricultural sector? Historically, many of these arrangements were responses to the desire of dealers or processors to assure supplies needed in their daily businesses, like fresh vegetables needed for canning and fluid milk for bottling. These perishable items could not be stockpiled nor distantly transported. Under binding agreements, one party, in effect, hired another to do a specific job.

Even items that could be shipped long distances were not always available as needed. Hence various contractual arrangements arose early to assure the supply. Wells Sherman (*19*), writing in 1928, noted that every vegetable growing region of importance which had to ship any considerable distance to market was financed by large dealer advances. He noted that the bulk of the money to produce the enormous canteloup crop of the Imperial Valley had always been supplied through shippers and handlers, the Colorado Mountain lettuce industry was stimulated and fostered by dealers who financed production and marketing, Mississippi tomatoes were financed as cotton was formerly financed, and about 40 percent of the money needed to produce the 1926 early potato crop came from distant sources through the hands of dealers to growers.

Evidently dealers had an advantage over bankers in financing production because they could spread the risks over a wide range of products, seasons, and localities. The banks could not. The financing was either part of a joint account or an advance purchase arrangement with growers to produce the commodity. In the latter case, the dealer agreed to take the crop at a fixed price per unit of a given grade and to make certain payments in advance, or at different periods of its growth or maturity, or for specific expenses. In any case, dealers were motivated to develop arrangements with growers in distant regions to assure themselves of constant supplies for eastern markets.

Such arrangements tend to change with the times. Today more contracts in fresh vegetables for market are in evidence between growers and shippers than between growers and eastern dealers. Besides vegetables, contracting with farmers for output historically appeared in other commodities, especially though not exclusively during the early stages of their expansion—for example, cotton or soybeans. Each has its own interesting set of circumstances.

What appears to be new about some contract arrangements is their ability to spread decisive cost-cutting methods. This role goes well beyond the usual one, arising from enterprise sharing, that permits production to be organized on a more efficient basis by enlarging the scale of the individual unit and applying more machine methods. Rather, we have seen, especially in the poultry industries, a very rapid push of biological breakthroughs, via closely supervised production contracts. Because of a favorable economic setting there was a major restructuring of production in a short time.

Many thoughtful people have entertained the proposition that such revolutionary changes in business methods for producing broilers are the wave of the future for other commodities. Protagonists still can be heard on both sides of this issue. To get my bearings, I have found it instructive to view all of animal agriculture, except dairy, in cross section. One can compare the recent share of U.S. output of each industry—cattle, hogs, sheep and lambs, eggs, turkeys, and broilers—that was produced under closely coordinated arrangements with the amount that farm prices for the commodity had declined from 1947 to 1970. This is shown in figure 1.[5]

Despite deficiencies of data and method, the strong negative relation suggests that cost reduction was the driving force behind the spread of these closely coordinated arrangements and, moreover, that effective price competition had prevailed despite market imperfections.[6]

It suggests that such closely coordinated arrangements could come in elsewhere rapidly, if important economies could be realized, although it is not clear that cattle, hogs, and sheep are the most likely prospects. Engleman (*18*) has long argued against hogs soon going this route, and his reasons still sound plausible.

There are few permanent reasons for present contract arrangements. Production and financing advantages, however great, can prove transitory. Technical knowledge is transferable; so are the alternative sources of capital. Except for cultural lag, tax advantages, or other subsidies, a particular organization for commodity production will survive as long as it satisfies the basic problems of production and investment as well or better than other arrangements.[7]

More than a decade ago, I noted that forward buying and selling of broilers might serve about the same purpose as contract production of broilers, wherever the latter provided for sharing of the enterprise responsibility (*14*). Today we see the beginnings of activity in

RELATIONSHIP BETWEEN SHARE OF U.S. OUTPUT UNDER CLOSELY COORDINATED PRODUCTION AND CHANGES IN AVERAGE PRICES RECEIVED BY U.S. FARMERS

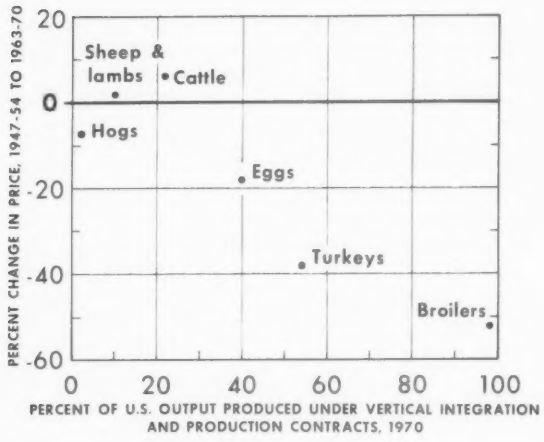

Figure 1

formalized buying and selling of broilers for forward delivery under the aegis of organized futures trading.[8] The same thing has happened for fed cattle and hog production. Contract production (called "custom feeding" in the cattle industry) and hedging in live cattle and hogs in futures are institutional substitutes (*13*).

Space does not permit analyses of such institutions of trade. But it is important to note that the expanding economy has served up a new requirement, namely, the need to develop more effective ways of pricing services. These services are produced by someone as a selected enterprise and used by another who decides that a commodity will be forthcoming, but does not wish to be involved in actual production.

Thus, the types of services that are now bought and sold are legion and they result in commodity transformations in form, place, and time. This is where one should look for the meaning of the secular rise of organized futures trading, forward dealing in "actuals," and contracting for the services of growing, processing, transporting, and storing commodities.

There is developing a broad-gaged market in the pricing of services, but one that is not readily perceived nor often correctly interpreted. The problems of pricing arising in this context are varied and include, among other things, the need for more reporting of prices for services—for example, poultry contract prices and other terms; custom-feeding charges and other terms; and prices for an increasing number of other operations performed for others in the growing, assembly, processing, and distribution of commodities.

Some Market Tendencies and Problems

The growth process, as we have described it, depends on the rise of markets. Hicks has made this point the central feature of his book, *A Theory of Economic History* (*7*). However, many problems of markets arise because of the very growth that markets foster. Institutions of trade tend to get out-of-date because products, processes, modes of organization, and ideas of property change. The lag in adjustment causes distortions and inequities that might be relieved through conscious effort.

There is obsolescence of grading factors, inspection methods, packaging, contract terms, financing and insurance methods, and techniques for searching the market, negotiating transactions, and redressing grievances. Also, public tolerance for negative external effects of economic processes is not constant, as recent experience teaches.

Economists could be busier than they are in clarifying the issues, measuring costs, and suggesting improvements. It probably would be a good use of their time. The problems are much too big to discuss here. Rather, I will abstract from these issues and discuss, instead, two general tendencies in markets for agricultural products that cause general concern.

Increasing dispersion of price structure. Growth signifies more variety of goods and services. More considerations of value arise because buyers now find shades of difference in time, place, and form (as well as options and guarantees) to be important, and sellers now find more ways to specialize output and vary offers. This could create more problems of arbitrage, wherein price differences should be brought into line with costs of implied commodity transfers. The larger number of prices tends to enlarge the task of acquiring information about offers and performance guarantees. Hence, there could be a widespread tendency for prices of different variants of a commodity or service to move independently.

Professor Stigler said that markets should not be faulted for this. Thus if it costs, say, $25 per lot to search the market for a better offer, then prices in different parts of the market may trade as much as $25 apart without any sacrifice (*20*). There remains a question as to whether the necessary information could be obtained for $5, through some arrangement. How serious this matter is in markets for agricultural products is an empirical question.

Each participant need not incur the cost of searching

the entire market as long as there are overlapping patterns of search. Conceivably each participant need canvass but one or two alternatives. Competition would force prices well into line across the market wherever the marginal cost of search was quite small. This result might not hold where buyers were few, but this is a matter of monopoly and not the costliness of trading.

We also need to know more about how markets actually function in related respects. For example, the role of terminal markets continues in doubt. No one seems to know how "thin" a central market can become before its use as a pricing base to settle contracts distorts pricing throughout the system.[9] The tendency is to infer performance largely from the numbers, size, and behavior of firms. Among other things the number count is sensitive to where the economic boundaries of the market are drawn, and these seldom conform to the boundaries of terminal markets. One needs to analyze the interaction of prices—farm, local, terminal, spot, forward, and so on—that are established throughout the entire system. We do have some studies of this kind (*2*, *6*), but too few to narrow appreciably the area of debate.

Even some of the simpler pieces of information would be helpful. For example, the rise of retail chains that buy produce directly at country points has been well noted. Yet probably in the aggregate well over one-half of the fresh fruits and vegetables moving to market in the United States still are sold in the cities by wholesale receivers or brokers via private treaty or auction (*22*). Buyers are retailers, restaurants, institutions, Government agencies, and intermediates themselves. The aggregate figure has been stable for the last 5 years but has varied between cities and commodities.[10]

We also need more insight into the pricing of contracts with growers for supplying commodities for processing. Are there different prices to different growers in a region? If so, do these represent differences in what is being contracted for? If terms offered are uniform, are they the most suitable to different growers' needs? When there are complaints, it should be possible to document pricing and other practices as a basis for an assessment and a search for remedies.[11]

Increasing vulnerability of firms to price changes. Increased specialization of production tends to decrease the elasticity of supply because equipment and skills tend to become highly specialized and less mobile. Other things equal, the greater the specialization, the more unstable the returns. The relevant price spreads become narrower and given percentage changes in price for commodities bought and sold can cause a larger percentage change in returns.

The instability is compounded wherever there is decreasing price elasticity of demand for a product—as a result of its becoming a smaller item in household budgets or having fewer substitutes as an intermediate good.

Yet specialization in food and agriculture has proceeded in the face of such an adverse setting. It has done so by finding ways to lessen exposure of the firm to loss as noted earlier. Public measures, such as surplus removal, price support, supply management, and deficiency payments, have been called into play. Apart from these, the search has been for various enterprise-sharing arrangements that are suitable.

The full range of such instruments can be seen today, for example, in the U.S. cattle feeding industry, wherein syndicates, partnerships, corporations, contract feeding, and forward contracts for feed, feeder cattle, and fed cattle are simultaneously in evidence. What are the issues and problems?

There are difficult problems of valuation under any arrangements where different interests participate in a given course of production. A distinction should be drawn between agreements that create meaningful prices and those that do not. In the case of cattle feeding, meaningful prices are established for a set of services to be produced by one party for another (through custom feeding, or through hedging in futures).

While the agreed price determines in large measure the sharing of returns from cattle feeding among the parties, *it also provides a significant message to other firms contemplating a similar course of production*. On the other hand, a partnership agreement between two or more parties to feed cattle provides only a formula for sharing the returns. By itself, the agreement is not necessarily significant to anyone else who might contemplate feeding cattle. Yet the two methods of limiting exposure of the parties are substitutes, as noted earlier.

Any formula for sharing returns is important to the participants. Its performance affects the durability of the agreement. Landlord-tenant agreements in farming have evolved over the centuries (indeed, residual-sharing agreements probably antedate the market system itself, being governed by rules of traditional society). What seems new today is the effort by larger commercial units which assemble, process, or distribute products, to enter cooperative agreements with each other for mutual benefit (*5*). Here the range in which terms can be fixed more favorably to one party than to the other, without either party pulling out of the joint agreement, can be large indeed.

Whether particular terms of a partnership affect resource use requires study of the facts of the case. Wherever efficiency implications are minor, equity becomes the main basis for appraisal. Any problems come

down to the distribution of power, and what can and should be done about it. Antitrust action is one possibility and collective bargaining the other. Each has its effective uses. The subject is too big and difficult to deal with here.

One should also explore the empirical conditions that simultaneously foster partnership agreements and deter the market in providing ways of sharing enterprise. Thus, farmers and processors often enter into various agreements to share the residual reward where either or both of the parties undertake a long-term investment. They seek to assure supplies or outlets, and coordinate effort at each level, for both to be successful. Examples appear in the production of sugarbeets, tree fruits, grapes, broilers, and shell eggs. Are these commodities whose technical conditions (such as perishability or bulkiness) limit how far the competitive market could develop its own enterprise-sharing techniques?

Put another way, under what conditions, if any, can we expect an institution of the competitive market to thrive in a highly integrated, highly concentrated, or otherwise imperfectly competitive industry and thereby broaden competition? I once thought this question was a contradiction of terms; now I am not so sure. Wherever there are latent competitive elements (often the case in agriculture), easier access to the market may bring them out. Something like this caused the breakdown of cartelization of the copper market by the rise of organized futures trading in copper. With organized futures trading recently being imposed on new commodity areas—like frozen concentrated orange juice, fresh eggs, and iced broilers—we soon may have opportunities to sharpen our insights into the role and suitability of the different types of market and nonmarket arrangements for subdividing enterprise responsibility and mobilizing resources for a given course of production.

Of course there are other ways to promote competition apart from trust-busting or installation of organized futures trading machinery. These include updating of the institutions for the conduct of modern business—such institutions as commodity grades, inspections, price reporting and other market information, means of borrowing, contract security, the laws and regulations respecting fair dealings, the use of patents, and so on. These are the great body of arrangements that facilitate access to economic opportunity and that need serious attention.

Indeed, with modern electronic technologies, the capacity for one individual to get in touch with another is better than ever. A great challenge is to exercise our imagination on how to effectively use the powers of industry and governments to realize the potentials for improved trading arrangements.[12]

Closing Observations

This paper has dealt with economic growth in relation to the progressive reorganization of markets. We have not stopped to examine the limits to growth and to learn how an increasing anticipation of such limits might direct conscious efforts to reorganize economic life. This subject lies beyond the scope of the paper.

A short summary of the underlying process of growth that has guided our inquiry is this: Specialization of production (with attending enlargements of scale and further applications of technology) marches on in a growing economy, as both a cause and a consequence of growth, but at no faster pace than permitted by the reduction in investment hazards through public and private techniques, which techniques are themselves a cause and a consequence of economic growth.

Ways are always being sought to mobilize capital in the face of increasing hazards to its owners. The nature and meaning of complementary and competing institutions for ownership—partnerships, pools, syndicates, corporations, cooperatives, forward commodity dealings, production contracts, and organized futures trading—may be made intelligible in this context. One should distinguish between those that are instruments of exchange and thereby influence market adjustment, and those that are not.

In this context, there has been much misunderstanding of the role of bilateral contracts. All fixed-price contracts, and some formula contracts, for a commodity or a service to transform the commodity, are true instruments of exchange. A contract signifies that an interval of time exists between transaction and performance. Except for "cash-and-carry" deals, as in grocery stores, restaurants, and taxicabs, all buying and selling of goods and services at any level denotes dealing in contracts. We should be able to identify what it is that is bought and sold in any contract, despite complexity. Then we could investigate barriers to arbitrage between the different kinds of claims to the same commodity or service. This is important because it is the possibilities of arbitrage that tie the activities of the different participants together into a unified market process. We might then be better able to understand market behavior and identify sources of market failure.

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Notes

[1]This article is based on a paper presented in August 1973 at the University of Alberta meetings of the American Agricultural Economics Association, the Western Agricultural Economics Association, and the Canadian Agricultural Economics Association, Edmonton, Canada.

[2]These ideas are rather compressed in their presentation here. Another way to suggest the central thesis in even briefer form is that growth begets specialization which begets growth (*25*).

[3]In general the definition of competition still appears to be unsatisfactory. See Morgenstern (*12*).

[4]This substitution is hard to observe in cases where the business firm avoids borrowing and draws upon retained earnings instead. But then the return on much of the business's equity would approximate the market rate of return on loans.

[5]Price data are from *Agricultural Statistics* (*21*) and production data from Mighell and Hoofnagle (*11*).

[6]There is no explicit model underlying the relationship shown. Were data available, one could employ a model that contained two supply response equations—one for the closely coordinated sector and one for the remaining sector.

[7]Alchian and Demsetz (*1*) recently followed out this thought in explaining resource allocations within the firm (in contrast to allocations between firms). They view the firm as team production, held together by a special class of contracts between the various joint input owners and a central party. Accurate assessment of productivities of individual inputs is very difficult and a large reward goes to "monitoring and metering" inputs among usages, mainly by detecting shirking—a task that can be achieved more economically within a firm than by across-market bilateral negotiations among input owners. Yet they recognize that the problem of policing inputs might be best solved in such cases by bilateral market contracts that call for farm inspections. (They cite the case of a farm commodity whose subtle quality variations can only be detected by inspecting the growing conditions.) Thus, each set of productive circumstances may have its own best type of contractual solution, either within the vertically integrated firm or across the market in some type of bilateral contract specifications.

[8]It is fairly obvious why nearly all fresh vegetables for processing must be grown by a vertically integrated processor, or under closely coordinated production contracts. The technical conditions—quality, perishability, seasonality, and bulkiness—offer little choice. But for most commodities, it is not obvious why existing arrangements—whatever they happen to be—must persist.

If today broiler producers do not have outlets for their live birds, except by entering into production contracts, this lack of outlets might reflect monopsony in processing without necessarily reflecting immutable conditions of broiler supply. One can visualize some broiler producers who understand how to care for birds, entering into forward delivery contracts rather than production contracts, with processors. The latter, in turn, might sell iced-broiler futures—thus assuming the role of hedging intermediary or, more accurately, the seller of processing services. An orderly flow of birds to slaughter could be preserved by giving the processor some delivery options. Alternatively, one can even imagine greater use of toll processing for the account of the grower or retailer

Such developments would imply several things. First, in the maturing phase of the industry, it would no longer be especially attractive for the processor to be a partner in producing broilers. Second, the broiler producer would have achieved a sufficient level of size and sophistication to accept managerial responsibilities abdicated by the processor. Third, the market would offer the grower the necessary range of services, including loan capital, to carry forward a modern broiler-growing operation under the aegis of forward selling.

One need not predict that these conditions will emerge on a substantial basis. But they appear feasible after some threshold of market expansion has been breached.

[9]The criterion of market "thinness" often is equated with fewness of transactions. This in itself can lead to mistaken interpretations. More important is the volume of latent bids and offers, that would result in greater volume at the terminal market should anyone choose to raise or lower the going market price by committing the necessary capital.

[10]The survey figures for March 1972 show that under 20 percent of all arrivals of fresh produce in Boston went directly to chainstores, whereas over 60 percent did so in Washington. The weighted average for 23 main cities is 34 percent. The average figure in the original survey by Manchester (*10*) was somewhat lower.

[11]While these are costly studies to make, various studies along these lines have been made (for example, *8, 15, 17, 23*).

[12]A recent start in such directions is revealed in reports of several USDA Marketing Teams (for example, *24*).

BOOK REVIEWS

Planning and Urban Growth: An Anglo-American Comparison

By Marion Clawson and Peter Hall. Published for Resources for the Future, Inc., by the Johns Hopkins Press, Baltimore, 21218. 1973. 287 pages. $12.50.

To the observer who has contrasted the manicured British countryside with the sometimes garish urban sprawl of the United States and suspected the contrast was evidence of some superiority in the British system, this book may be somewhat of a letdown. The authors cite no peculiar British successes that might be transferred to America.

Why review a book on urban planning in an agricultural research journal? In the competition for urban growth, some agricultural land continually succumbs. In the struggle to channel urban growth and preserve rural land and rural values, land use controls are advocated and attempted.

Planning is essentially a political process. In both countries the political systems have tended to protect the values that are most highly regarded. In America these have been populist values—the rights of private property and democratic involvement. In Britain they have tended to be elitist: for the few, the preservation of agricultural land and rural values; for the masses, the provision of well-regulated locations for housing and industry with a minimum of travel time to work. The authors concluded that neither country got precisely what it wanted.

The American system of land use regulation has been largely zoning, with flexible market pricing and relatively easy rezoning. The more rigid British system, on the other hand, seems to embody the philosophy that the ideal urban structure is known and can be produced through planning. This philosophy is evident in the 28 "New Towns" that were deliberately created to house and provide work for some 2 million Britons after World War II.

The authors show that in area and population, England and Wales are fairly comparable with the Northeastern urban complex of the United States:

	England and Wales	*Northeastern urban complex*
Urbanized area (million acres)	3.3	3.5
Population (million)	25.7	28.5
Density (persons per square mile)	4,942	5,290

They point out, however, that the British have been more economical of land for residential uses. Densities of 27 persons per acre in megalopolis England compare with about 10 persons per acre in the residential land of the Northeastern urban complex. They ascribe this to differences in land use planning and controls in the two countries as well as to historical influences.

After drawing other statistical parallels between the two countries, the authors examine geographic and institutional reasons for observed differences in land use and population density. In both countries an artificial scarcity has increased the cost of developable land, perhaps unreasonably. Tighter controls in Britain have raised prices of developable land even more effectively than the somewhat haphazard zoning process of the United States. Of interest to the theorist is the British attempt to nationalize development rights on all land, and to capture all the price increase resulting from land use changes. The attempt apparently worked fairly well in the New Town developments but eventually broke down on land where development rights were privately held and negotiated. In Britain, as in the United States, development and planning produce both gainers and losers. "Perhaps the chief lesson of this book is that in the past this fact has not been frankly faced." The authors conclude, "In the future, it must."

In some respects this book resembles a well-cooked stew—tasty and nourishing, but difficult to sort out if one wants to identify the initial ingredients. The stew results from a boiling down and combination of two massive studies: Clawson's impressive *Suburban Land Conversion in the United States*, and *The Containment of Urban England*, in which Peter Hall collaborated with other researchers under the auspices of a nonprofit British research institute called Political and Economic Planning (PEP).

The authors fault planners on both sides of the Atlantic for viewing planning more as an inventory or projection than as a process. In both countries they note the inevitable results of fragmentation of authority among various planning agencies. In particular, they cite the inconsistency that results from urban responsibility for planning for people, while suburban or rural areas have control over the land. They see "only one way to end such a situation: to bring about a fundamental reform of local government on the basis of the metropolitan or city region principle, or alternatively to transfer planning and land use control powers to higher-level regional units of government."

The authors cite the criticism that "economic analysis may be positively perverse in appearing to give clear-cut quantified answers to questions where the basic variables are very often open to considerable doubt," and answer that economic analysis "provides an orderly framework for logical and disciplined discussion." The framework offered by this book is a worthwhile attempt to open up the discussion of institutional inadequacies on both sides of the Atlantic. As usual, Clawson has developed the best case possible out of largely inadequate and non-comparable data on the subject.

"One cannot escape the conclusion that the land use planning process is antiquated and technically inefficient. . .one may be unable to prescribe the. . .specifications for a better system, and yet be convinced that the existing system is badly designed." From their considerable objectivity and perception, the authors have presented a general set of conclusions regarding what are clearly some of the key issues of the moment relating to quality of life. The book clearly requires a more specific sequel.

Howard A. Osborn

Economics and the Public Purpose

By John Kenneth Galbraith. Houghton Mifflin Company, 2 Park Street, Boston, Mass. 02107. 1973. 334 pages. $10.

Once again the eminent non-Marxist economist has come out with a critique of our economy and a proposal to rectify the apparent inequities of the capitalist structure. One may look at his thesis as perhaps an emulation of the Keynes performance of patching up capitalism by socializing part of the economy.

Galbraith contends that the Nation is divided into two economic sectors. The powerful one is the "planning system," which is composed of the dominant large companies whose "technostructure" controls the important power points of government. They receive large incomes which they share with their unionized workers. This phenomenon, coupled with the fact that the planning system controls aggregate demand and most of the vital resources of the Nation, is evidently an important cause of inflation. Galbraith calls this "systemic." The other sector is the "market system," composed of small firms and individual entrepreneurs. This group has little impact in influencing prices and Government policy. Agriculture is in this sector and, despite subsidies and Federal farm agencies, can do little to make the economy more effectively resolve the confused agricultural problem.

Galbraith's purpose is to achieve greater equalization of power between the planning and market systems. To achieve this, he suggests adopting a more abrupt progressive income taxation, increasing and extending minimum wages, and unionizing the smaller businesses, including the agricultural sector.

As is fairly obvious to anyone who has read Galbraith in the past, he considers that the planning system in its present structure causes hardship for many people, and is particularly responsible for the endogenous attributes of inflation and recessions—or what Karl Marx called the "inner contradictions" of the capitalist society.

To be sure, there could be arguments to support his call for changes. There are many deterrents to allocative efficiency in our competitive economy. An important one, in which Galbraith is particularly interested, is income inequality and the unresponsiveness of the price system to social wants.

No doubt introducing changes to eradicate social ills is a noble undertaking, but this reviewer got the impression that Galbraith thinks it can be accomplished more easily than one should rationally believe. This book is well written and informative, but it does not achieve the purpose that the author attempted, that is, "to put it all together, to give the whole system." Let us hope his next book does.

Jack Ben-Rubin

Operations Research Methods for Agricultural Decisions

By R. C. Agrawal and Earl O. Heady. Iowa State University Press, Ames, 50010. 1972. 303 pages. $10.95.

The field of operations research is growing fast. So is the number of textbooks on the subject. The book by Agrawal and Heady deals with selected tools and theories of operations research. Although the authors

emphasize the discrete and deterministic nature of operations research, their selection of topics is not restricted by these criteria. The 13 chapters in the book can be grouped into five sections:

1. General survey (chapters 1, 2, and 3)
2. Programming (chapters 3, 4, 5, and 12)
3. Game theory (chapters 6 and 7)
4. Stochastic processes (chapters 8, 9, and 10)
5. Miscellaneous topics (chapters 11 and 13).

The first two chapters give a general survey of the subject with various applications and the steps involved in building a model. The survey is followed by three chapters on linear programming and extensions. The discussion of linear programming includes an excellent discussion of the mathematics of the simplex method. The extensions of linear programming include variable price and resource programming and integer, dynamic, nonlinear, and quadratic programming. Chapter 13 discusses the case where the objective function is a ratio of two linear functions (linear fractional functional programming).

The chapter on game theory includes discussion of various choice criteria. Several illustrations are given. The relationship between game theory and linear programming through a skew-symmetric matrix is shown.

Discussion of stochastic processes includes Markov chains, inventory models, and theory of queues. The relationship of Markov chain processes with dynamic programming is shown. Two inventory models are discussed, one with no shortages admissible and another with shortages admissible. The waiting-line problems include single-channel and multiple-channel queues.

The remaining two chapters cover network analysis and simulation. The first includes a discussion of PERT. The final chapter touches on the general principles of simulation.

An appendix includes a review of elements of set theory, calculus, and matrix algebra.

This is an impressive catalog of topics. However, in the process of attaining breadth of coverage, the authors have overlooked some places where the presentation could have been improved. In setting up a linear programming problem, they do not point out the difference between "function" and "functional." The problem of degeneracy is not discussed. Some of the examples on game theory are discussed from the point of view of one player only, although the value of the game is not the same for the other player. The discussion of dynamic programming is marred by several misprints. It is hoped that the authors will improve the discussion in a subsequent edition.

This is a welcome addition to the literature on quantitative economics.

Jitendar Mann

We Don't Know How

By William and Elizabeth Paddock. The Iowa State University Press, Ames, 50010. 331 pages. 1973. $4.95 (paper).

The Paddocks make it clear that they have joined the ranks of those disenchanted with efforts of the rich developed world to promote the development of the third world.

Their field of investigation is agriculture and the region selected is Central America and Mexico. They are well qualified for the undertaking as they have been professionals in the development field and have had experiences in Latin America over a period of 30 years.

The Paddocks' method was to solicit recommendations from top levels of development agencies as to the most successful projects and then to make first-hand observations of these as well as of projects with which they had been familiar at earlier dates. Their observations are that current progress reports are like the fisherman's tale—they begin with exaggerations and improve with each retelling until they ultimately bear little or no resemblance to reality. Project justifications are coverups for decisions made on the basis of geopolitical expediency. Projects serve to provide presence and visibility for the agencies and individuals involved and are abandoned as soon as their political potential and personal career advancement value have been exploited. These allegations apply to international agencies and foundations as well as to bilateral programs. The only institutions that receive commendation from the Paddocks are private industries—two food processing firms. Where development has been successful it was because conditions were favorable—for example, Monterey, Mexico, because of its proximity to the United States, and San Pedro Sula, Honduras, because of its proximity to the plantations of one of the firms.

The Paddocks recommend that we practice development strategies on our own underdeveloped areas, the Appalachians, the Indian reservations, and the ghettos until we learn more successful techniques.

Jane M. Porter

Food Aid and International Agricultural Trade

By Robert L. Bard. D. C. Heath and Company, 125 Spring Street, Lexington, Mass. 02173. 321 pages. 1972. $12.50.

As a reference source for the many food and commodity trade agreements and practices now in effect, Bard's book is excellent. It is broad in scope and contains detailed legal citations relative to programs and administrative authorities.

Bard deals with the economic basis and corollary effects of food aid programs for both exporting and recipient nations. The book is based on studies and data that reflect for the most part periods of ample supplies or surpluses in major producing nations.

It is hoped that Bard will carry his interest and analysis forward. His evaluation of the impacts of the 1972 and 1973 demand and supply situations, worldwide and by major exporting and importing nations, would be useful. A particular case in point would be the present World Food Security program proposed by A. H. Borema, Director General of the United Nations FAO.

Although Bard has concentrated on U.S. and FAO-related programs in this volume, the entry onto world markets the past 2 years by many nations could give added dimension to his scholarly review.

In his preface and summary chapter, Bard sets forth the parameters of his book, pointing out that ". . . This book is concerned with those aspects of the economic and financial interrelationships between food aid and international agricultural law that may be affected through control methods fitting a broad definition of law."

In part of his summation, Bard concludes ". . .it is interesting to speculate about the overall configuration of the control mechanisms applied to food aid transactions as an example of a particular variety of the use of law and law-related instruments to resolve intricate economic problems with strong international implications."

Many an economist and many a program administrator may take issue with Bard's analysis, falling back to "the practicality and immediacy" of carrying out a program in a given way, or of not having one. Nevertheless, the criteria and conclusions which the author sets forth merit consideration by any who work in this volatile field.

Whether exception is taken or not, Bard has contributed materially to knowledge of the facts, problems, and possibilities of this complex and vastly important area of national and international agricultural and commodity use.

This is a book that should open a few doors, not just for economists and attorneys, but for those who establish policy and administer programs both within governments and in private trade.

James S. Ward

Brazil's Agricultural Sector: Economic Behavior, Problems, and Possibilities

By Ruy Miller Paiva, Salomao Schattan, and Claus F. Trench De Freitas. Ministry of Planning, Sao Paulo, Brazil. 1973. 428 pages.

Brazilian agriculture has undergone remarkable changes since World War II. *Brazil's Agricultural Sector* is a handy up-to-date synthesis of the record to 1972. Although comprehensive (428 pp.), it is handy, concise, and readable. It is a handbook of Brazilian agricultural information prepared for the International Conference of Agricultural Economists that met in Sao Paulo in August 1973. The authors have done an admirable job of simplifying for the lay reader the numerous statistical tables, charts, and trend lines.

Paiva, author of the first half of the book, makes a factual presentation of the postwar performance of the sector that summarizes the trends in production, prices, exports, modern inputs to increase productivity, farm income distribution, and farm wages. He follows this with a comprehensive statement of Government policies that have been designed to help agriculture. This section is practically a catalog of the enlightened policies that economists, AID officials, and World Bank technicians recommended during the 1960's—scientific research, technical assistance, financial assistance, marketing programs, and minimum price support programs. Brazilian ingenuity in tailoring these policies to fit local needs is presented in the cases of coffee, sugarcane, wheat, and beef cattle.

The last half of the book, by De Freitas, is an economic geography that surveys Brazil's natural resources, geology, climate, soils, and vegetation. It incorporates the basic information from a large number of technical studies prepared since 1960. Readers who have read about the Amazon region may wish to diversify their knowledge of a country the size of the continental United States. Of particular interest are discussions of the cerrado, or savannah bushland, that covers 25 percent of the country, the caatinga, or semiarid scrub country of the northeast, and the pantanal, a low flooded area along the Paraguai river in the southwest, a future rice bowl.

The conclusion of the book is an economic geography of the five major geographical regions which focuses on

the specific characteristics of agriculture in each. This survey contains an enormous amount of detail on the development of specific crops and livestock.

Development technology. The most stimulating idea in this handbook is Paiva's idea that *prices* play the crucial role in the diffusion of modern technology. The gist of his argument is this: Brazilian agriculture is dualistic in its technology; traditional subsistence technology exists side by side with modern technology. This modern technology is of paramount importance if Brazil is to meet sector goals of her two conflicting sets of national objectives: (1) to supply at cheap prices an abundance of food and raw material for domestic needs and export markets, and (2) to raise farm income wages and employment for the farm population. Nothing but increased efficiency through the use of modern inputs can satisfy these conflicting objectives. Farmers must adopt techniques that make use of capital investments, technical knowledge, credit facilities, and managerial skill. Government policies as outlined in the book have improved infrastructure and made the essential inputs available to farmers who are willing to use them. But Government cooperation, abundance of credit, and the willingness of farmers are still not enough. The decisive factor in the diffusion of modern technology is *prices*. Entrepreneurs will not make investments, use credit, or apply research until prices reach a satisfactory level, and have the prospect of staying there. The nonagricultural sector provides the mechanism for prices in the markets.

If Paiva had developed this idea to show that the commercialized modernized segment of agriculture had been a basic factor in the Brazilian "economic miracle" he would have brought home a winner. It is ironic that he published this idea in 1973, the very year in which Brazilian farm prices reached remarkable levels in domestic and export markets. Prices for cotton, coffee, sugar, soybeans, castorbeans, beans, and oranges were high enough to provide the motive force to satisfy Paiva's hypothesis. If it is correct, the diffusion of modern technology in 1973 must have been proceeding at a remarkable rate. From his ringside seat in Sao Paulo, he could have made a classic demonstration of his process on soybeans, cotton, and castorbeans that would have exceeded in interest the famous *Ninety-nine Fazendas*, which he and W.H. Nicholls published in 1963. Success stories in agricultural development are news and this one cries out to be told.

Traditional technology. After Paiva establishes the importance of "modernized" technology, he drops it. He passes up a chance to show the key role of agricultural exports in Brazil's development, which is running at an annual rise of 10 percent in GNP (p. 48). Deadpan, he slides through a 400-percent rise in these exports between 1953-56 and 1969-71 in two meager sentences. In his evaluation of the success of Brazilian agriculture, he drops his distinction between "modernized" and traditional technology—and slips back into the rut of traditional agriculture. Undoubtedly this is the prevailing technology for the farmers outside the commercial process, but it is not news. In his evaluation of the sector since the war, he concedes that it provided a surplus of exports and food well in excess of the needs of a rapidly growing population. He implies, however, that the sector has failed, or at least has problems, in land distribution, distribution of farm income, and farm wages. He attributes these problems to low productivity and (on p. 99) to the "not very rapid development of the non agricultural sector." This is incredible when we note that the real value of the Brazilian GNP doubled between 1963 and 1973, from $23 billion to over $50 billion. His picture of a lame performance applies only to the traditional technology.

How unfair it is to demand so much from a modest handbook prepared for a conference! Actually the book is loaded with informational riches. We could use 500 copies to give to people interested in the basic facts of Brazilian agriculture. We are so grateful for the English edition that we dare not cavil with typographical errors. It is the most recent book on Brazil's farm sector—the other two are Schuh's *Agricultural Development of Brazil* and Hermmann's *Changes in Agricultural Production in Brazil, 1947-65*.

The Brazilian Embassy believes that this book can be obtained from the Ministry of Planning, which published it for the Sao Paulo conference. The address is:

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Samuel O. Ruff

Subsistence to Commercial Farming in Present Day Buganda: An Economic and Anthropological Survey

Edited by Audrey I. Richards, Ford Sturrock, and Jean M. Fortt. African Studies Series 8. Cambridge University Press, 32 E. 57th Street, New York 10022. 1973. 336 pages. $22.50.

How to break through the level of traditional subsistence agriculture and create a class of market-oriented farmers is a problem in many developing countries. This book is based on a survey of a group of farmers in southern Uganda who have successfully made the break with tradition. The survey, under the auspices of the Centre of African Studies of Cambridge University, attempted to answer such questions as: Under

what conditions did the change come about? What were the main factors responsible? What types of individuals were receptive to change, and what were their motives?

The scene is the fertile crescent of Buganda, north of Lake Victoria and southwest of Lake Kyoga, a well-watered land suited for a wide range of crops. Coffee is the most important cash crop. The stage was set for private development in 1900 when the colonial government granted 8,000 square miles of thinly settled land to 1,000 Buganda chiefs and their followers. The new owners were allowed to will, give, or sell this so-called mailo (from the English "mile") land to any native of Uganda. Purchase by aliens was prohibited. This excluded Asians and Europeans. The land grant was originally intended to end the political disturbances at the time, but in subsequent years so many of the recipients and their heirs were willing to sell some of their land that the number of registered landowners in Buganda increased from 4,000 in 1905 to 112,000 in 1967.

Over the years, different types of buyers acquired the mailo land. In the 1920's when land was still cheap, it was the peasants, with capital accumulated from growing and selling cotton. During the coffee price boom of the early 1950's, nonfarmers bought land and planted coffee with capital accumulated in trade and in urban occupations. In the 1960's, after the decline of coffee prices, professional men and government bureaucrats bought land and started dairy farms. The survey included some who had inherited their land, some who purchased it in the 1920's, and a large number who had acquired coffee or dairy farms with money earned in trade, the professions, or government.

The survey was made in 1966 by an economist and two anthropologists who interviewed 140 farmers in eight counties. The sample was selected intuitively, not rigorously. Size of farm, employment of hired labor, and use of improved farming methods were intended to be the criteria for selection, but the farms were actually picked on an ad hoc basis to include "progressive" dairy farms, multiple enterprise farms, farms that planted "new" crops such as sugarcane and tea, and finally 38 farms in Bugerere County, where each owner paid at least $60 income tax. In the end, the survey became a series of case histories.

The result is a collection of facts about Buganda farmers and their farms presented in interesting narrative style, but the salient points are not focused sharply enough. The answers to the questions are there but it requires effort to find them. For example, one finding was that 75 percent of the farmers who graduated from small to large scale farming passed through no intermediate period between that on the rented farm and that on the large farm. Although this supports the thesis expressed elsewhere in the book, that the change to commercial farming occurs only when the peasant sees the possibility of a dramatic improvement in his position, the point is not discussed except for a short statement: "It is suggested that this step was taken when sufficient capital had been accumulated, or when loans were obtained." There should have been more detail on how they took this important step.

Of the farmers sampled, twice as many purchased their farms as inherited them. Half were farmers before they purchased their land; half came from nonfarming occupations. The conditions encountered here, namely good land that could be purchased at a reasonable price, plenty of immigrant labor from surrounding poor areas, sufficient capital, and a market for cash crops, were more favorable than those in many other developing countries. The farmers described here are far from typical, especially when such a large percentage went into farming from urban occupations.

Besides the results of the survey, the book has a summary of the social and economic background, including such topics as economic history, administrative structure, land tenure, and government policy in Buganda. The bibliography has over 100 titles.

Herbert H. Steiner

The Agrarian History of England and Wales

Edited by H. P. R. Finberg. Vol. I, Pt. 2—A.D. 43-1032. Cambridge University Press, 32 E. 57th Street, New York, N.Y. 10022. 566 pages. 1972. $37.50.

The editor is the author of the section of the book on "Anglo-Saxon England to 1042." S. Applebaum discusses "Roman Britain" and Glanville R. J. Jones "Post-Roman Wales." Although the period discussed is remote from present-day agricultural economics, many of the problems of that day, such as size of farm, choice of crops, productivity, and farm management, are still problems for today's farmers.

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